

Appl. No. 10/085,588

REMARKS

Claims 18, 21-23, 27 and 30-48 are amended. Claims 1-17 and 20 are cancelled. Claims 18-19 and 21-48 are pending in the application.

The specification stands objected to due to informalities. The Examiner suggests amendment of the abstract and title to provide improved descriptiveness relative to the invention claimed. The title and abstract are amended accordingly and applicant requests withdrawal of the objection to the specification in the Examiner's next action.

Paragraphs [0037] and [0040] of the specification are amended to correct typographical errors.

In response to the Examiner's request for restriction, applicant hereby affirms the provisional election which was made without traverse to prosecute the invention of Group II (claims 18-48). Claims 1-17 are appropriately cancelled from the application.

Claims 31, 33-34, 40-43 and 46-47 stand objected to under 37 CFR § 1.75(c) as being in an improper dependent form. Each of claims 31, 33-34, 40-43 and 46-47 are amended to properly depend from the corresponding base claims. Claims 35-39 and 48 are also amended to correct dependency. Accordingly, applicant requests withdrawal of the objection to the claims in the Examiner's next action.

Claims 18-48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sneh, U.S. Patent No. 6,200,893. The Examiner is reminded by direction to MPEP § 2143 that a proper obviousness rejection has the following three requirements: 1) there must be some suggestion or motivation to modify or combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the combined references must teach or suggest all of the claim limitations. Each of pending claims 18-19 and 21-48 are allowable

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over Sneh for at least the reason that the reference fails to disclose or suggest each and every limitation in any of those claims.

As amended, independent claim 18 recites a deposition method comprising providing a reservoir in fluid communication with a deposition chamber providing at least one metastable species within the reservoir, containing the metastable specie within the reservoir and subsequently flowing the metastable specie into the deposition chamber. The amendment to claim 18 is supported by the specification at, for example, paragraphs 22, 27, 29, 32 and 39. Sneh discloses a chemical vapor deposition method that includes depositing a metal precursor onto a substrate, followed by flowing a radical species and subsequent deposition of additional metal precursor (Fig. 3 and col. 7, ll. 38-51). Sneh further indicates production of atomic species utilizing *in-situ* plasma generation, intra-showerhead plasma generation, or remote generation by high-density plasma source, UV dissociation, or dissociation of metastable molecules (col. 10, ll. 35-46). Sneh does not disclose or suggest the claim 18 recited providing at least one metastable specie within a reservoir, containing the metastable specie within the reservoir and subsequently flowing the at least one metastable specie into the deposition chamber.

As set forth in the applicant's specification, the recited providing a metastable specie into a reservoir, containing the metastable specie and subsequently flowing the metastable specie from the reservoir into the deposition chamber can be distinctly advantageous. The containment can allow build up of a metastable specie at a location proximate the deposition chamber prior to introduction into the deposition chamber and, especially where the reservoir has a large volume relative to the deposition chamber, can prolong the lifetime of an activated species and/or enhance or maximize formation of the metastable

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species prior to deposition (see the background section, paragraph 21, and paragraphs 38-39). Accordingly, independent claim 18 is not rendered obvious by Sneh and is allowable over this reference.

Dependent claims 21 and 23 are amended to properly depend from independent claim 18. Claim 20 is cancelled. Dependent claims 19 and 21-26 are allowable over Sneh for at least the reason that they depend from allowable base claim 18.

As amended, independent claims 27, 30 and 32, as well as independent claim 45 as originally filed, each recite containing an activated species within a reservoir and/or condensing the volume of the activated species upon introduction into a deposition chamber from the reservoir. Independent claim 45 is amended to correct a typographical error. Each of claims 27, 30, 32 and 45 are allowable for at least reasons similar to those discussed above with respect to independent claim 18.

Dependent claims 28-29, 30-32, 33-34 and 46-48 are allowable over Sneh for at least the reason that they depend from corresponding allowable base claims 27, 30, 32 and 45.

The pending claims additionally stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of U.S. Patent No. 6,458,416, and independently over the claims of U.S. Patent No. 6,627,260. The claims of the present application are directed toward methods of deposition utilizing a generation of metastable species. Additionally, the claims pending the application recite containment of the metastable species within a reservoir prior to flowing the metastable specie into the deposition chamber and/or compressing the metastable species upon flowing the metastable specie into the deposition chamber. The claims issued in the

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6,458,416 patent and those in the 6,627,260 patent do not disclose or in any way suggest the recited utilization of a metastable species during deposition. Further, none of the claims issued in either of the patents suggests the recited containment of a metastable species within a reservoir prior to flowing into the deposition chamber, or the recited compressing of a metastable species upon flowing into the deposition chamber. Accordingly, pending claims 18-19 and 21-48 are not rendered obvious by the claims issued in either Patent No. 6,458,416 or Patent No. 6,627,260. Applicant therefore requests withdrawal of the double patenting rejection of the pending claims in the Examiner's next action.

For the reasons discussed above, pending claims 18-19 and 21-48 are allowable. Accordingly, applicant respectfully requests formal allowance of such pending claims in the Examiner's next action.

Respectfully submitted,

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